

REMARKS

Formal drawings are submitted to replace the informal drawings objected to in the office action.

The rejection of claims 17-20 under 35 USC §112, second paragraph, as being indefinite is respectfully traversed. Recitation of “the first node” in the body of the claim is thought to be reasonably clear because “a first node” is previously recited in the preamble. Recitation of “a second node” in the body is thought to be reasonably clear in referring to the “second node” introduced in the preamble. Those skilled in the art would recognize that the reference to “a second node” in the body refers to the node previously introduced. However, claims 17 and 18 are amended for purposes of clarity and not for purposes of patentability, and the rejection is now thought to be moot.

New claims 21-24 are added to claim the invention in alternative language. The new claims are thought to be patentable over the cited art because the combination of limitations are not seen to be shown or suggested. For example, new claim 21 claims an optical switch arrangement. The switch arrangement includes a first optical switch having a plurality of first-switch transmit channels and a plurality of first-switch receive channels and a second optical switch having a plurality of second-switch transmit channels and a plurality of second-switch receive channels. Each of the first and second optical switches is adapted to perform a self-test and output a respective self-test-result signal that indicates success or failure of the respective self-test. Each of a plurality of optical couplers is coupled to a respective first-switch transmit channel and a respective second-switch transmit channel and is adapted to provide an optical output signal. Each of a plurality of optical splitters is coupled to a respective first-switch receive channel and a respective second-switch receive channel and is adapted to split an input optical signal. Each splitter is further adapted to provide an output optical signal to the respective first-switch receive channel and second-switch receive channel. A control circuit is coupled to the first and second optical switches and is adapted activate one and deactivate the other of the first and second optical switches in response to states of the self-test-result signals. This combination of limitations is not understood to be suggested by the cited prior art.

Claims 1-24 remain pending in this application. Reconsideration and allowance of the application are respectfully requested.

The Office Action fails to show that claims 1, 6-11 and 13-20 are unpatentable under 35 USC §103(a) over “Park” (US patent publication 2003/0011844A1 to Park et al.) in view of “Wosinska” (“Large-Capacity Strictly Nonblocking Optical Cross-Connects Based on Micro-electro-opto-mechanical Systems (MEOMS) Switch Matrices: Reliability Performance Analysis”, Journal of Lightwave Technology, Vol. 19, No.8, August 2001 by L. Wosinska et al.), and “Ramadas” (US patent application number 2003/0339007A1 to Ramadas et al.).

The rejection is respectfully traversed because the Office Action fails to show that all the limitations are suggested by the references, fails to provide a proper motivation for combining the teachings of Wosinska with teachings of Park, fails to provide a proper motivation for combining the teachings of Ramadas with the teachings of the Park-Wosinska combination, and fails to show that the combination could be made with a reasonable likelihood of success.

Claim 1 includes limitations of and related to a first optical switch having first-switch transmit and receive channels and a second optical switch having second-switch transmit and receive channels, at least one of the first and second optical switches adapted to conduct a self-test and indicate whether the self-test has failed. A control circuit is configured and arranged to activate one of the first and second optical switches in response to the other of the first and second optical switches conducting the self-test. Thus, the claim clearly indicates that the control circuit activates one of the switches in response to the self-test.

It is respectfully submitted that the Park-Wosinska-Ramadas combination does not appear to teach or suggest these limitations as alleged. Wosinska shows a primary switch and a protection switch without any apparent mechanism for controlling the switchover. Furthermore, the cited teachings of Ramadas do not suggest these limitations. Ramadas’ para. 0051 teaches:

[0051] Referring to FIG. 4D, the system has an optical switch matrix that contains the switching fabric, digital control, analog control, and calibration circuitry to support the function of the switch. This module is a self-contained unit that is under the control of the REC to perform switching functions between optical input and output ports. The switch matrix digital control supports communication control from the REC, control of analog interfaces, calibration functions, and monitoring of the switch integrity. The electronic circuitry is visible to the control processor card, perhaps, through a PCI type of back plane bus. A redundant switch matrix slot is provided to support field replacement. Electrical lines in the back plane indicate to the fiber interface cards the current active fabric card. Switchover is coordinated responsibility with the fiber interface cards. Switch matrix diagnostics support isolating failures in the switching cells in a destructive manner. Self-test modes allow the entire switch fabric to be substantially free from defects. This may require external equipment to fully test data paths.

Thus, Ramadas only generally teaches that “Self-test modes allow the entire switch fabric to be substantially free from defects.” This is not suggestive of the specifically claimed use of a self-test and the control circuit activating one of the switches in response thereto.

Furthermore, Ramadas teaches field replacement of a switch matrix: “A redundant switch matrix slot is provided to support field replacement.” This is not suggestive of the claimed control circuit responsive to a self-test. Therefore, the Office Action errs by using certain keywords present in Ramadas to support the allegation that the specific claim limitations are shown.

The alleged motivation for combining Ramadas with the Park-Wosinska combination is improper. The alleged motivation is improper because it uses the invention as the reason to support the combination. That is, the alleged motivation states that “it would have been obvious ... to use self-test to detect [sic] failure, as taught by Ramadas et al., in the modified optical communication system of Park et al. and Wosinska et al. because self-test allows a switching system to detect failure and automatically switchover from a bad module to a good module.” As demonstrated above, the cited teachings of Ramadas do not teach any such switchover that is responsive to the self-test. Ramadas suggests that the self-test allow the switch fabric to be substantially free from defects without any apparent tie in to a circuit that controls the switchover based on the self-test. Thus, the alleged motivation relies on the present invention to support the combination, and is therefore improper.

Claims 6-11 and 13-20 include further limitations that refine or are similar to the limitations of claim 1 and are patentable over the Park-Wosinska-Ramadas combination for at least the reasons set forth above.

The rejection of claims 1, 6-11, and 13-20 over the Park-Wosinska-Ramadas combination should be withdrawn because the Office Action fails to show all the limitations are suggested by the combination, fails to provide a proper motivation for combining the references, and fails to show that the combination could be made with a reasonable likelihood of success.

The Office Action fails to show that claims 2-3 and 12 are unpatentable under 35 USC §103(a) over the Park-Wosinska-Ramadas combination as applied to claim 1, and further in view of “English” (US patent publication 2003/0039014A1 to English). The rejection is respectfully traversed because the Office Action fails to show that all the limitations are suggested by the references, fails to provide a proper motivation for modifying the teachings of the Park-Wosinska-Ramadas combination with teachings of English, and fails to show that the combination could be made with a reasonable likelihood of success.

Claim 2 depends from claim 1 and is patentable for at least the reasons set forth above. Claim 12 includes similar limitations and is also patentable over the Park-Wosinska-Ramadas-English combination.

Claim 3 includes further limitations of and related to each of the first and second controllers being configured and arranged to bi-directionally communicate with the other of the first and second controllers and to establish only one of the first and second controllers being active. These limitation are not taught by the cited teachings of English.

The Office Action cites English’s system controller 60 of FIG. 1 and paragraph 0018 as teaching these limitations. However, English’s system controller 60 is not shown as communicating with any other system controller and establishing with another system controller one to be active. Furthermore, English’s paragraph 0018 clearly teaches that “System software running on system controller 60 determines which one of the switch fabric cards 10 is fully active.” Thus, the controller designates a card to be active, and does not with another controller establish which of the system controllers is active. Therefore, the Office Action does not show that all the limitations are suggested by the Park-Wosinska-Ramadas-English combination.

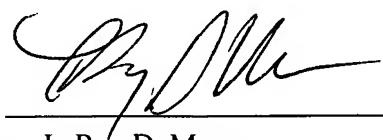
The alleged motivation for combining English with the Park-Wosinska-Ramadas combination is improper because no evidence is provided to indicate that any control capabilities in the Park-Wosinska-Ramadas combination are lacking and that English’s controller 60 would supply the missing capabilities.

The rejection of claims 2-3 and 12 over the Park-Wosinska-Ramadas-English combination should be withdrawn because the Office Action fails to show all the limitations are suggested by the combination, fails to provide a proper motivation for combining the references, and fails to show that the combination could be made with a reasonable likelihood of success.

Withdrawal of the rejections and reconsideration of the claims are respectfully requested in view of the remarks set forth above. No extension of time is believed to be necessary for consideration of this response. However, if an extension of time is required, please consider this a petition for a sufficient number of months for consideration of this response. If there are any additional fees in connection with this response, please charge Deposit Account No. 50-0996 (LMCO.009PA).

Respectfully submitted,

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